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1. Abadan Is Hot Spot at Head of Persian Gulf
2. Mexico City Is Continent's Third Largest
3. Level of Utah's Great Salt Lake Varies
4. Widely Used Coracle Vanishing in Wales
5. St. Malo Rises from Ashes of War

E. JOHN LONG

VISITORS TO MEXICO CITY NEVER FAIL TO JOIN THE XOCHIMILCO AQUATIC PARADE

In a Venice-like atmosphere, flower-bedecked boats push along the Canal de la Viga, shaded by feathery-leafed eucalyptus trees. These "floating gardens" are the remnant of the large lake on which the Aztecs built their capital city (Bulletin No. 2).

Bulletin No. 1, October 22, 1951

Abadan Is Hot Spot at Head of Persian Gulf

THE eyes of the oil-consuming world are turned toward Iran and a steaming hot port near the head of the Persian Gulf.

There, centered in the city and refinery of Abadan, is Iran's huge petroleum industry, now stalled. It was developed under British concession. Behind the story of Abadan and its oil lie four decades of spectacular growth. Ahead looms an uncertain future, initiated by the Iranian government's recent nationalization of all its oil resources, and followed by British appeal of the case to the United Nations Security Council.

Once Was Mud and Sand

Iran granted concessions to other foreign-controlled companies, but these were later abandoned. The British operation was the only successful one. Its over-all plant includes the world's largest refinery at Abadan (illustration, inside cover), another at Kermanshah, and seven producing fields in southwest and western Iran.

At the turn of the century, Abadan Island, cut by winding channels at the mouth of the Shatt al 'Arab, presented a series of desolate mud flats, fringed by date palms.

North and east of the island, the now industrialized oil districts were little more than mountain and desert wastelands, where nomad life went on much as it had since the days of the *Arabian Nights*.

The region's oil—destined to place Iran among the world's leading producers—was by no means a modern discovery. In ancient times oil springs and gas outlets had fed "eternal flames" housed by Zoroastrian temples. Wild tribesmen had discovered that the black oozings from the ground could be used for light and heat, and to bind the wood of their buildings and tools.

It remained for pioneers from the West, however, to turn on the commercial spigots. In 1901 Iran granted British subject William D'Arcy an oil concession covering all the country except its northern provinces.

British Government Controls Company Stock

After many disappointments, the first valuable oil deposits were discovered in 1908 at Masjid-i-Sulaiman in the Zagros Mountains, about 120 miles northeast of Abadan Island.

The Anglo-Persian Oil Company (later called Anglo-Iranian) was formed. Added to private investments were the contributions of the British government, which eventually held the controlling majority of stock.

Other wells gushed liquid gold in the Zagros foothills. More oil turned up at Naft-i-Shah, midway along the Iran-Iraq border in the west. From Naft-i-Shah the petroleum was pumped over the mountains to the Kermanshah refinery and distributed in the form of kerosene and gasoline over much of northern Iran.

Toward Abadan, pipelines (illustration, next page) poured rivers of oil into a modern refinery with a yearly capacity of 20,000,000 tons.

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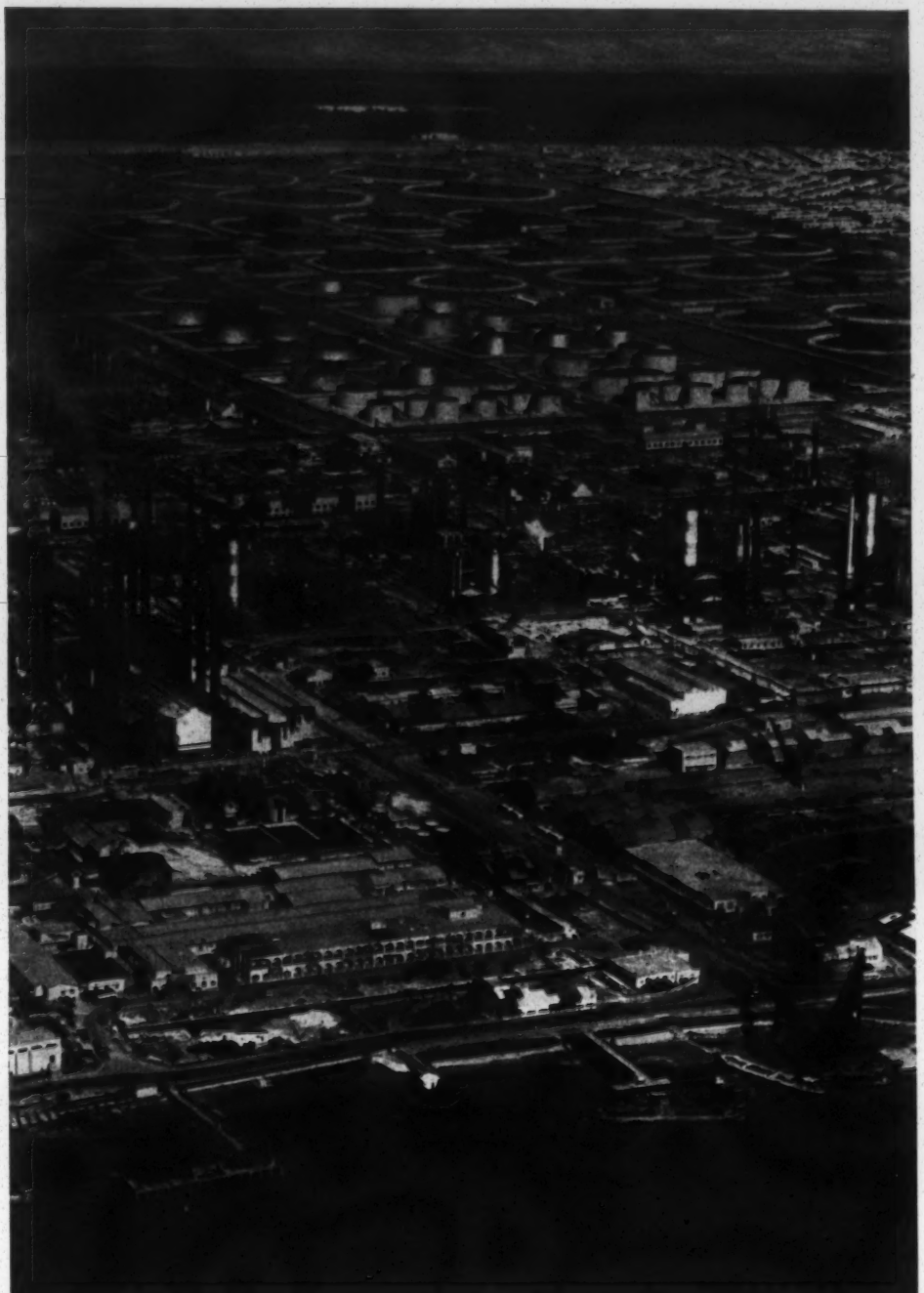

HUNTING AEROSURVEYS, LTD.

BEFORE BRITISH TECHNICIANS EVACUATED ABADAN (Bulletin No. 1), QUIETING ITS CRACKING PLANTS AND COOLING ITS SMOKESTACKS, THIS REFINERY HAD THE WORLD'S LARGEST OUTPUT

Bulletin No. 2, October 22, 1951

Mexico City Is Continent's Third Largest

SUN-DRENCHED Mexico, D.F., the capital of Mexico, is withstanding persistent growing pains. Counting 2,144,000 people, it is the North American continent's third-largest city as well as its oldest capital. D.F. means Distrito Federal, the federal district that encloses Mexico City as the District of Columbia bounds the United States capital.

The Latin metropolis stands high and cool in a broad mountain-rimmed basin 7,440 feet above sea level. It is by far the largest high-altitude city in the world. Denver, Colorado, is its nearest rival in the United States, and Denver lies 2,000 feet lower and has 413,000 inhabitants. South America's Andean cities, a few of which are higher than Mexico City, count their populations in thousands.

Has Grown by Leaps and Bounds

Mexico City is in the south central part of the republic. It stands in the tropics 600 miles south of the border states. Yet its altitude makes its climate mild and pleasant. The temperature usually hangs between 60 and 80 degrees.

The basin surrounding Mexico City is the country's most populous region and one of its richest farming and mining areas. So favored is the locale that Mexico City has grown by leaps and bounds in recent years. In 1921 its population was only 615,000. By 1930 it was nearly 1,000,000. Then the limits were extended to take in several suburbs. And still the city grew. It reached 1,757,000 in 1947.

The modern appearance of the city surprises visitors. Many of the new office and apartment buildings are of latest design and construction (illustration, next page). Block on block of three- and four-story buildings such as are seen in any great city are interspersed with ornate public structures and historic edifices.

The site of Mexico City is a natural for a capital. The highly organized Aztec Indians recognized this and made it the seat of their empire long before the conquering Spaniards came.

An Inland Venice

When Hernán Cortés, with "400 foot and 20 horse" rode over the rim of the Valley of Mexico in November of 1519, he saw spread out before him and his awed conquistadores a plain filled with shining lakes "and many cities and villages built in the water . . ."

This was Tenochtitlán, golden city of the Aztecs. Its temples and castles rose on canal-divided islands and were linked to the mainland by three masonry causeways. It was like an inland and mountain-girt Venice.

Cortés conquered and razed Tenochtitlán. From its remains he built a new city, imperial seat of New Spain. As Mexico City pushed outward through the centuries, it grew on filled land, covering the lakes.

Mexico City's center is still the square that Cortés laid out. Originally the Plaza Mayor, it was renamed Plaza de la Constitúcion, and is known to all Mexicans as the Zócalo. Here stands one of the oldest

In the oilfields and refineries some seventy thousand workers have been employed by the Anglo-Iranian Oil Company. The town and neighboring villages that have grown up around the Abadan refinery count 175,000 or more inhabitants.

The company built Abadan in its entirety. New roads, airfields, and housing developments recently have been added. Various training, education, health, and recreation programs have been put into effect by the company as part of its huge Iranian investment and working operation.

NOTE: Abadan is shown on the National Geographic Society's map of Asia and Adjacent Areas. Write the Society's headquarters, Washington 6, D. C., for a map price list.

For further information, see "Journey into Troubled Iran," in the *National Geographic Magazine* for October, 1951; and "Beside the Persian Gulf." March, 1947. *(Back issues of the Magazine may be obtained from the Society's headquarters at 60¢ a copy, 1946 to the present date; $1.00 from 1930 through 1945; and $2.00 from 1912 through 1929. Earlier issues, when available, at varied prices.)*

ANGLO-IRANIAN OIL COMPANY

ACROSS THE WASTES OF IRAN'S ZAGROS MOUNTAINS, CRUDE OIL POURS IN PIPELINES TOWARD THE ABADAN REFINERY

Bulletin No. 3, October 22, 1951

Level of Utah's Great Salt Lake Varies

UTAH'S Great Salt Lake, the "Dead Sea" of the American continent, has had more downs than ups in recent years. During 1951, however, its water level has been rising.

Fluctuating with the region's rainfall, the lake reached a high for modern times in 1877 and a low in 1940. Today it still has a dozen feet to rise before it attains its level of 74 years ago. The lake's area varies along with its depth. It is generally listed as covering an area slightly larger than the State of Delaware, and measuring 75 miles long by 50 miles wide.

Lake Is Natural Evaporation Pan

Periods of steady decline in the lake's level have stirred apprehension over its future. A geologist in the 1880's predicted its early disappearance, and government engineers have expressed the conviction that the high water of 1877 will never again be reached.

Today's lake is the salty remnant of what geologists call Lake Bonneville, a fresh-water body as large as Lake Huron. For centuries its salty successor has served as an evaporation pan for the waters of the Jordan, Bear, and Weber rivers that flow into it. It has no outlet. The result is an ever-increasing burden of salt deposited as the water evaporates. The lake now is four to seven times as salty as the ocean, the proportion varying with the changes in level.

The only animal life in Great Salt Lake consists of tiny brine shrimp about one-third of an inch long, and two species of minute brine flies that pass their larval stage on the water and fly away. There are no shoal-water plants and no fish.

Great Salt Lake's beaches are unlike those of ocean sand. The sand is made up of oolitic grains called fresh-egg stone or roe stone from their smooth, rounded, opaque form resembling minute pearls in composition and structure. Each grain is built up, onion-like, layer upon layer, of carbonate of lime deposited by chemical action from solution in the water.

Islands Are Bird Refuges

The number of Great Salt Lake islands varies with the water level, seven being usually counted. Antelope, the largest, is 15½ miles long and 5½ miles wide, rising nearly 3,000 feet in the southeast section. It is connected to the mainland by a periodically dry sand flat. Sheep, cattle, and horses are grazed on Antelope. Fremont Island, to the north, is about 800 feet high and five miles long.

Stansbury Island with twin peaks may be an island one day and a peninsula the next. Like Antelope, it rises about 3,000 feet above the lake. Some of the smaller islands and the marshlands at the northeast corner of the lake are bird and wild-fowl refuges—breeding grounds for gulls, pelicans, herons, and cormorants.

High mountains ring much of the lake but in its immediate basin lie much of Utah's wealth and population. Near the eastern shores stand

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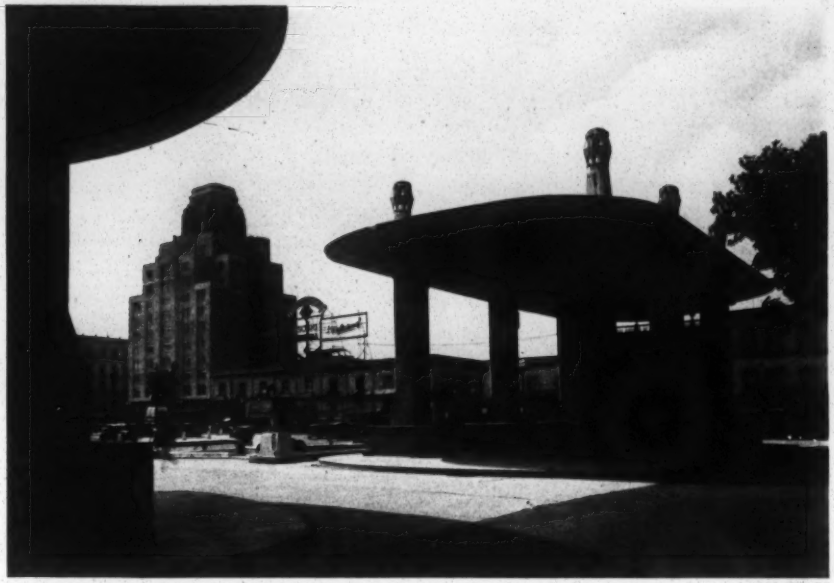
churches in North America, "Mexico's St. Peter's," as well as the huge National Palace where ruled Spain's viceroys, the spectacular native leader Iturbide, and the ill-fated Emperor Maximilian.

The metropolis spreads today south to the moated gardens of Xochimilco, "The Place Where Flowers Are," (illustration, cover), and north to Teotihuacán, where long before the Aztecs came, a forgotten, mysterious race built temples and pyramids with a symbolic art strangely like that of ancient Egypt.

To the west, beyond a broad avenue lined with fashionable shops and modernistic apartment buildings, is Chapultepec, "Grasshopper Hill." Its castle was a military academy when Americans stormed the rocky heights in 1847, and the scene of spendthrift glamour during the reign of Maximilian and Carlotta, 17 to 20 years later.

NOTE: Mexico appears on the Society's map of Countries of the Caribbean.

For further information, see "From the Halls of Montezuma" (21 color photographs), in the *National Geographic Magazine* for February, 1944; "In the Empire of the Aztecs," June, 1937; "Modern Progress and Age-Old Glamour in Mexico," December, 1934 (out of print; refer to your library); and "North America's Oldest Metropolis," July, 1930.



HUGO BREHME

PAVILIONS FOR FLOWER VENDERS FRAME ONE OF MEXICO CITY'S MANY MODERN OFFICE BUILDINGS: IN 1934 IT WAS THE HIGHEST; NOW MORE RECENT CONSTRUCTION DWARFS IT

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Bulletin No. 4, October 22, 1951

Widely Used Coracle Vanishing in Wales

A NEW law is threatening the survival of the Welsh coracle, a boat with at least 2,000 years of history behind it.

For the present, according to reports, salmon fishermen continue to ply the primitive craft on the Teifi River in Wales, one of the few spots where coracles are still used in the British Isles. The fishermen work in pairs, holding a net between their vessels and drawing together to take the catch.

"A Floating Basket"

New licenses for coracle fishing, however, have been forbidden by Teifi authorities in the interest of fish preservation. Unless efforts to repeal the law are successful, the practice will cease when the current license holders die or lose their right.

Coracles are made by covering a wicker frame (something like an oversized basket) with hide, skins, tarpaulin, or other waterproofed cloth. Under various names, and in different sizes and shapes, such boats are found in many regions of the world, especially in the Orient (illustration, next page).

Among their numerous advantages, coracles can be cheaply and quickly constructed with such simple tools as flint knives and bone needles. They are easy to handle; smaller ones are light enough to be carried on one man's back. They can float in only a few inches of water.

The coracle is often mentioned in connection with another ancient and similar skin-made craft, the Irish curragh. Experts say, however, that the more conventionally shaped seagoing curragh is basically different from the true coracle, which usually keeps to the rivers.

Julius Caesar wrote of having encountered the hide-covered boats of the Britons in 55 B.C., with indications that these may have been of the curragh type. Later, during the struggle in Spain against Pompey's forces, the Roman commander himself used such craft for transporting soldiers across a river whose bridges had been downed by flood.

Coracles Used Centuries Before Christ

Another famous warrior, England's Duke of Wellington, found coracles valuable in the campaigns of the early nineteenth century in Mysore, India. He ordered 20 of the "basket boats" made, issuing specific instructions that they be "ten feet in diameter and three feet deep . . . covered with double leather."

Sculptured and written records show that coracles were paddled or poled on Asian rivers many centuries before Christ. They are still widely distributed from Afghanistan to Indochina, from Tigris and Euphrates lowlands to Tibet's roof-of-the-world.

One theory has it that the idea of the old "bull boats"—the buffalo-hide craft that once served North American Indians—came by way of Bering Strait with migrants from Asia.

Travelers have reported seeing various types of coracles in South

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Ogden and Salt Lake City, the Beehive State's largest cities. At Ogden begins the Lucin Cutoff of the Southern Pacific Railway (illustration, below). Near Salt Lake City, the resort Saltair attracts tourists who wish to test the claim that a person cannot sink in the salt water. They find that they do, indeed, float easily on the surface.

NOTE: The Great Salt Lake may be located on the Society's map of the Southwestern United States.

For additional information on Utah, see "First Motor Sortie into Escalante Land," in the *National Geographic Magazine* for September, 1949; "The West Through Boston Eyes," June, 1949; "Mapping Our Changing Southwest," December, 1948; "Utah's Arches of Stone," August, 1947; "Flaming Cliffs of Monument Valley," October, 1945; and "Utah, Carved by Winds and Waters," May, 1936.

See also, in the GEOGRAPHIC SCHOOL BULLETINS, October 13, 1947, "Utah's Salt-Bed Speedway Once Was Lake."

THE IRON HORSE JUMPS THE SALT LAKE IN TWO GIANT LEAPS

Here a train nears the Ogden end of the Lucin Cutoff across Great Salt Lake. This stretch is seven miles long. In the distance lies Promontory Point, where the line crosses land for five miles then plunges another 20 miles to the west shore. From the lake's shores about 40,000 tons of salt are taken each year.

"Everyday Life in Ancient Times"

A new book compiled by the National Geographic Society brings to life the peoples of the ancient lands where Western civilization originated—Mesopotamia, Egypt, Greece, and Rome. Illustrated with 120 full-color paintings by H. M. Herget and written by four noted authorities, the 356-page volume is available to schools at $5.00 a copy postpaid in the United States and its possessions, and $5.25 abroad.

Bulletin No. 5, October 22, 1951

St. Malo Rises from Ashes of War

ST. MALO, virtually destroyed in World War II, has risen, phoenix-like, from its ashes.

Reduced to rubble seven years ago, the ancient seaport on France's Brittany coast today presents a bright new sky line to visitors approaching it from the sea.

Restoration Makes Rapid Progress

About three-quarters of the old walled city's closely packed buildings, fitted together, yardless, like a great jig-saw puzzle, were destroyed in August, 1944. Some damage was caused by bombardment when American forces surrounded and besieged the occupying Germans, but the greater part of the destruction was the result of fires started by the Germans, who surrendered after a nine-day siege.

For a time it seemed unlikely that the displaced Malouins—most of whom had been evacuated before the siege ended—would ever return to their shattered citadel. But today they are making rapid progress in rebuilding and remodeling their unique home. The population figure is nearly up to its prewar 14,000.

St. Malo stands on a 65-acre granite island at the mouth of the River Rance. On the northeast, a causeway called Le Sillon (the furrow) connects it with the mainland. The town can expand only upward, due to its island location in a region of exceptionally high tides. In the spring these tides sometimes rise 50 feet above low-water level. Their violent action constantly changes the appearance of the rocky coast line.

Under the restoration program, narrow streets are being widened and straightened. A modern town hall and blocks of apartments replace gray granite structures built through the 16th to 18th centuries, and even older wooden houses in which the thrifty Malouins had lived for generations.

St. Malo's encircling ramparts, begun in 1155 (illustration, next page), its fortifications, and its great chateau, partially survived the all-out warfare. They are being repaired in such a way as to retain as much as possible of the atmosphere of the picturesque Old Town.

Illustrious Adventurers Called St. Malo Home

For more than a thousand years, St. Malo has been the home of seafaring men. Its stately mansions, many built during the 18th century when St. Malo was a stronghold of privateers, were homes of sea captains and prosperous merchants. Beneath the buildings the island's rocky hillsides are honeycombed with dungeons, vaults, and cellars in which the pirates hid their loot.

From St. Malo sailed René Duguay-Trouin, one of the city's most distinguished sons. He climaxed his brilliant career as a privateer with the capture of Rio de Janeiro in 1711. Jean Cadnec sailed from St. Malo to Madagascar and, as the story goes, so completely won the favor of the natives that they made him king. Later, they patriotically poisoned him to prevent him from leaving Madagascar.

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America. Africa, however, has been found to be curiously lacking in this craft; and China and Japan seem to have largely skipped skin boats for wooden-tub styles.

There are as many different models of coracles as materials and needs dictate in various regions. The yak skin is typical of Tibet, for example. Closely woven bamboo, made seaworthy by coconut oil and other calking substances, is used in Indochina.

A whole coracle fleet of 30 to 40 round, oxhide boats is operated at the Kurnool Ferry in central India. And one of the strangest of all is the "tigari" of Bengal, made of earthenware. Turned by the village potter and ornamented around the edge, this fragile bowl recalls the old nursery rhyme:

> "Three wise men of Gotham went to sea in a bowl;
> If the bowl had been stronger, my tale had been longer."

NOTE: For information on the uses of various types of small boats, see "Labrador Canoe Adventure," in the *National Geographic Magazine* for July, 1951; "Sea Fever" (dugout canoe), February, 1949; "Trawling the China Seas" (junks), March, 1950; "Sailing with Sindbad's Sons" (dhows), November, 1948; "Seafarers of South Celebes" (praus), January, 1945; "Landing Craft for Invasion," July, 1944; "Britain Just Before the Storm" (canal barges), August, 1940; and "Ships from Dugouts to Dreadnoughts," January, 1938.

MAYNARD OWEN WILLIAMS

AT BAGHDAD, IRAQI BOATMEN UNLOAD BAGS OF LIME FROM A CORACLE ON THE TIGRIS

The Arabian coracle, called a *gufa*, is woven like a basket and covered with a pitchlike preparation. This type of vessel has been used since ancient times. The "ark of bullrushes," in which the babe Moses drifted along the Nile, could have been such a craft as this. The gufa is still in wide use today, for ferrying passengers and moving freight along the rivers of south Asia.

St. Malo has had close ties with America since discovery of the New World. Jacques Cartier, discoverer of the St. Lawrence River, was a Malouin. A street in the old city is named for him, and his statue stands in the gardens of a section of the western ramparts.

Descendants of St. Malo's sea rovers turned their talents to deep-sea fishing when piracy became outmoded. Herring and oysters are their modern prey. Interrupted only by the war, a fishing fleet still sails each year for the Grand Banks of Newfoundland, returning to St. Malo months later with cargoes of cod.

South of the town spreads the spacious harbor from which, in normal times, ships carried on a brisk trade, chiefly with Britain. To Britain St. Malo sent slate, and dairy products, fruit, and vegetables of the fertile region round about. In return came coal and timber.

St. Malo's prewar industries included the time-honored shipbuilding that had supplied transport to its adventurous seafarers down the centuries, iron and copper founding, and ropemaking.

NOTE: St. Malo may be located on the Society's map of Western Europe.

For further information, see "St. Malo, Ancient City of Corsairs," in the *National Geographic Magazine* for August, 1929.

JUNIUS B. WOOD

ST. VINCENT'S GATE IS THE "FRONT DOOR" TO ST. MALO'S OLD WALLED TOWN

Horse-drawn vehicles appear at St. Malo's main gate. In prewar days a policeman was stationed there to discourage entrance of automobiles into the narrow streets. So small was the walled section that motor transport was unnecessary either to save time, or feet. Over the roof of the dormer-windowed building (left) points the spire of St. Vincent's Cathedral. Part of this church dates from the 12th century, and only the spire, added in 1849, was completely destroyed during World War II.